

# MINISTRY OF CIVIL AVIATION

Air Navigation Acts, 1920 to 1938  
and Ministry of Civil Aviation Act, 1945

## THE AIR NAVIGATION REGULATIONS, 1946

Made by the Minister of Civil  
Aviation under the Air Navigation  
(Consolidation) Order, 1923

*20th February, 1946*



LONDON

PRINTED AND PUBLISHED BY HIS MAJESTY'S STATIONERY OFFICE

To be purchased directly from H.M. STATIONERY OFFICE at the following addresses:

York House, Kingsway, London, W.C.2; 13a Castle Street, Edinburgh 2;

39-41 King Street, Manchester 2; 1 St. Andrew's Crescent, Cardiff;

80 Chichester Street, Belfast;  
or through any bookseller

1946

Price 2d. net

AIR NAVIGATION ACTS, 1920 to 1938, AND  
MINISTRY OF CIVIL AVIATION ACT, 1945

REGULATIONS

In pursuance of the powers conferred upon me by the Air Navigation (Consolidation) Order, 1923, as authorised by the Air Navigation Acts, 1920 to 1938, the Ministry of Civil Aviation Act, 1945, and all other powers enabling me in that behalf, I, the Right Honourable Lord Winster, Minister of Civil Aviation, make the following Regulations, amending the Air Navigation Directions, 1936 (A.N.D.13), as amended by the Air Navigation Directions, 1936 (A.N.D. 13A), the Air Navigation Regulations, 1937, the Air Navigation (No. 2) Regulations, 1937, the Air Navigation (No. 3) Regulations, 1937, the Air Navigation Regulations, 1938, the Air Navigation (No. 2) Regulations, 1938, the Air Navigation (No. 3) Regulations, 1938, the Air Navigation Regulations, 1939, the Air Navigation Regulations, 1940, the Air Navigation Regulations, 1941, the Air Navigation (No. 2) Regulations, 1941, and the Air Navigation Regulations, 1943, which first-mentioned Directions as so amended are hereinafter referred to as "the said Directions".

1. In the said Directions—

(i) references to the Secretary of State shall be construed as references to the Minister of Civil Aviation ;

(ii) for the words "Secretary, Air Ministry," wherever those words occur, there shall be substituted the words "Director General, Ministry of Civil Aviation".

2. For Section III of the said Directions the following Section shall be substituted :—

"SECTION III.—LICENSING AND DUTIES OF AIRCRAFT  
MAINTENANCE ENGINEERS

44. With reference to paragraph 11 of Schedule II to the Order, application forms for the grant, extension and renewal of licences to serve in the capacity of aircraft maintenance engineers (hereinafter referred to as "aircraft engineers (M)") will, on request, be supplied by the Secretary, Air Registration Board, Brettenham House, Lancaster Place, Strand, London, W.C.2.

45. The categories and duties in respect of which licences for aircraft engineers (M) may be granted shall be as follows :—

Category A (applicable to aircraft excluding engines).

(i) Certification as to fitness for flight of an aircraft for which a certificate of airworthiness is about to be issued ;

(ii) Certification as to the safety for flight of public transport aircraft ;

(iii) Certification of work done under approved maintenance schedules ;

(iv) Certification of repairs approved as minor repairs ;

(v) Certification of modifications approved as minor modifications ;

(vi) Certification of replacement of approved components and parts.



Category B (applicable to aircraft excluding engines).

(i) Certification after overhaul, including the engine installation, subject, however, in the case of the overhaul, repair or modification of the aircraft instruments, variable pitch airscrews, or electrical equipment, to prior certification by a firm approved for the purpose or by an aircraft engineer (M) licensed for the purpose in Category X ;

(ii) Certification of approved repairs ;

(iii) Certification of approved modifications ;

(iv) Certification of the construction and replacement of components and parts, and of the materials used therefor:

Category C (applicable to engines)—

(i) Certification as to fitness for flight of the engines in an aircraft for which a certificate of airworthiness is about to be issued ;

(ii) Certification as to safety for flight of engines in public transport aircraft ;

(iii) Certification of work done under approved maintenance schedules ;

(iv) Certification of the rectification of defects, the embodiment of approved modifications and the replacement of approved parts, provided that the work has not involved dismantling the engine other than to obtain access to the pistons, cylinders and valve-operating gear.

Category D (applicable to engines only).

(i) Certification after overhaul, subject, however, in the case of the overhaul, repair or modification of magnetos and other electrical equipment, to prior certification by a firm approved for the purpose or by an aircraft engineer (M) licensed for the purpose in Category X ;

(ii) Certification of approved repairs ;

(iii) Certification of approved modifications ;

(iv) Certification of the construction and replacement of parts and of the materials used therefor.

Category X.

(i) Certification of the installation and the compensation of compasses ;

(ii) Certification of overhauls, repairs, modifications or replacements to—

(a) magnetos,

(b) variable pitch airscrews,

(c) aircraft instruments and engine instruments,

(d) electrical equipment.

46. An applicant for the grant of an aircraft engineer's (M) licence shall not be less than 21 years of age.

47. The requirements to be satisfied for the grant, extension or renewal of an aircraft engineer's (M) licence shall be as laid down in the handbook of British Civil Airworthiness Requirements and amendments thereto published by the Air Registration Board.

48. The periods of validity of licences for aircraft engineers (M) shall be as follows :—

(a) not more than twelve months on the grant of a licence ;  
and

(b) not more than twelve months on the renewal of a licence."

3. For the heading of Section IV and for paragraphs 55, 56 and 56A of the said Directions the following heading and paragraphs shall be substituted :—

" SECTION IV.—CERTIFICATION OF AIRCRAFT  
BEFORE FLIGHT, ETC.

55. (1) With reference to paragraph 8 of Schedule II to the Order, the owner or hirer of a public transport aircraft registered in Great Britain and Northern Ireland shall obtain the approval in writing of the Air Registration Board to maintenance schedules in respect of the aircraft and shall incorporate therein any amendments which may from time to time be required by the Board.

(2) The following provisions shall apply to the maintenance and inspection of any such aircraft carried out in connection with the issue of a certificate of safety :—

(a) Prior to the issue of a certificate of safety the owner or the hirer of the aircraft shall furnish such information as may be necessary to enable the aircraft engineers who are to sign the certificate to be satisfied that up to the date of issue of such certificate all maintenance and inspection required to be carried out in accordance with the approved maintenance schedules for the aircraft have been so carried out ;

(b) The aircraft (including its prescribed instruments and equipment, but excluding its engines and engine installations and all instruments relating thereto) shall, subject to the provisions of (d) of this sub-paragraph, be certified in the form and manner shown in paragraph 56 by the holder of an aircraft engineer's (M) licence in Category A in respect of such aircraft ;

(c) In the case of a flying machine or an airship, the engines and engine installations and the prescribed instruments relating thereto shall, subject to the provisions of (d) of this sub-paragraph, be certified in the form and manner shown in paragraph 56 by the holder of an aircraft engineer's (M) licence in Category C in respect of such engines ;

(d) The aircraft and engines may be certified by the same aircraft engineer if he is the holder of an aircraft engineer's (M) licence both in Category A and in Category C in respect of such aircraft and engines, or by the holder of an aircraft engineer's (O) licence who is authorised by endorsement on such licence to issue certificates of safety in respect of that particular type of aircraft (including its engines) :

Provided that to satisfy the requirements of paragraph 9 (1) (a) of Schedule II to the Order, the magnetic compasses may be adjusted and compensated by the holder of an aircraft navigator's licence, first class or second class, who shall certify to that effect on the deviation cards. In such case the next subsequent certificate of safety issued may be altered by inserting after the word " equipment " the words " other than magnetic compasses ". Such alteration to a certificate of safety shall be initialled by the aircraft engineer who issues the certificate.



56. The certificate of safety issued in accordance with the provisions of paragraph 8 of Schedule II to the Order shall, according to the class of the aircraft concerned, be in one of the following forms, or in such other form as may be approved as suitable for the purpose :—

(1) In the case of a flying machine or an airship :—

#### CERTIFICATE OF SAFETY\*

Aircraft Type.....

Nationality and Registration Marks.....

I hereby certify that I am satisfied that the above aircraft (including its prescribed instruments and equipment, but excluding the engines and engine installations and all instruments relating thereto) is safe in every way for flight, provided that the conditions of loading specified in the certificate of airworthiness are complied with, and I hereby certify that all maintenance and inspection in accordance with the approved maintenance schedules have been carried out and that adjustments and rectifications found necessary have been made and inspected to my satisfaction.

Signed.....

Aircraft Engineer : Licence No. ....

Time of Issue .....

Dated at:.....this.....day of.....194....

I hereby certify that I am satisfied that the engines and engine installations (including the prescribed instruments relating thereto) of the above aircraft are safe in every way for flight, and I hereby certify that all maintenance and inspection in accordance with the approved maintenance schedules have been carried out and that adjustments and rectifications found necessary have been made and inspected to my satisfaction.

Signed.....

Aircraft Engineer : Licence No.....

Time of Issue .....

Dated at.....this.....day of.....194..

---

\* *Note*.—This certificate includes the attachment of the radio apparatus to the aircraft structure, and the condition of the earth system of the aircraft, including the bonding and screening to ensure suppression of high frequency electrical interference. It does not include the radio apparatus.

(2) In the case of a free balloon :—

**CERTIFICATE OF SAFETY\***

Free Balloon Type.....

Nationality and Registration Marks.....

I hereby certify that I am satisfied that the above aircraft (including its prescribed instruments and equipment) is safe in every way for flight, provided that the conditions of loading specified in the certificate of airworthiness are complied with, and I hereby certify that all maintenance and inspection in accordance with the approved maintenance schedules have been carried out and that adjustments and rectifications found necessary have been made and inspected to my satisfaction.

Signed.....

Aircraft Engineer : Licence No. ....

Time of issue .....

Dated at.....this.....day of.....194..

\* *Note.*—This certificate includes the attachment of the radio apparatus to the aircraft structure, and the condition of the earth system of the aircraft, including the bonding and screening to ensure suppression of high frequency electrical interference. It does not include the radio apparatus.

(3) In the case of a fixed balloon :—

**CERTIFICATE OF SAFETY\***

Fixed Balloon Type.....

Nationality and Registration Marks.....

I hereby certify that I am satisfied that the above aircraft (including its prescribed instruments and equipment and also the winch and cable by which it is operated) is safe in every way for flight, provided that the conditions of loading specified in the certificate of airworthiness are complied with, and I hereby certify that all maintenance and inspection in accordance with the approved maintenance schedules have been carried out and that adjustments and rectifications found necessary have been made and inspected to my satisfaction.

Signed.....

Aircraft Engineer : Licence No.....

Time of issue .....

Dated at.....this.....day of.....1941..

\* *Note.*—This certificate includes the attachment of the radio apparatus to the aircraft structure, and the condition of the earth system of the aircraft, including the bonding and screening to ensure suppression of high frequency electrical interference. It does not include the radio apparatus.

56A. Certificates of safety shall be prepared in ink or indelible pencil."



4. In sub-paragraph (2) of paragraph 59 of the said Directions, for the words "a ground engineer" there shall be substituted the words "an aircraft engineer".

*Balloons* 5. In sub-paragraph (4) of paragraph 63 of the said Directions, for the words "a ground engineer licensed in Category X" there shall be substituted the words "an aircraft engineer (M) licensed in Category A".

*Just* 6. In sub-paragraph (1) (viii) of paragraph 64 of the said Directions, before the word "navigator" in the three places where that word appears there shall be inserted the word "aircraft".

*By Work* 7. In sub-paragraph (b) of paragraph 76 of the said Directions, for the words "a licensed ground engineer" in the two places where they appear there shall be substituted the words "a licensed aircraft engineer".

*Revised* 8. In the heading preceding paragraph 80 and in paragraphs 80, 81 and 82 of the said Directions, before the words "navigator" and "navigator's" where they respectively appear there shall be inserted the word "aircraft"; the word "an" being substituted for the word "a" as necessary.

9. Paragraph 85 of the said Directions shall be amended as follows:—

(1) For sub-paragraph (5) the following sub-paragraph shall be substituted:—

"(5) For an aircraft navigator's licence: not under 19 years of age and not over 50 years of age. For an aircraft navigator's licence, cadet class: not under 18 years of age."

(2) After sub-paragraph (5), the following sub-paragraph shall be inserted:—

"(6) For an aircraft engineer's (O) licence: not under 21 years of age, and for an aircraft engineer's (O) licence, cadet class: not under 20 years of age."

(3) In the proviso, for the words "a navigator's" there shall be substituted the words "an aircraft navigator's".

10. Paragraph 86 of the said Directions shall be amended as follows:—

(1) In sub-paragraph (4), the word "Aircraft" shall be inserted before the word "navigator's".

(2) After sub-paragraph (4), the following sub-paragraphs shall be inserted:—

"(5) Aircraft navigator's licence, cadet class: not more than twelve months.

(6) Aircraft engineer's (O) licence, or aircraft engineer's (O) licence, cadet class: not more than twelve months."

11. For the heading preceding paragraph 92 of the said Directions, there shall be substituted the following heading:—

"PILOTS' LICENCES FOR PRIVATE FLYING MACHINES, PILOTS' LICENCES FOR BALLOONS, PILOTS' LICENCES (FIRST CLASS) FOR AIRSHIPS, AIRCRAFT NAVIGATORS' LICENCES, AIRCRAFT NAVIGATORS' LICENCES, CADET CLASS, AIRCRAFT ENGINEERS' (O) LICENCES AND AIRCRAFT ENGINEERS' (O) LICENCES, CADET CLASS."

12. In sub-paragraph (2) of paragraph 92 and in sub-paragraphs (b) and (c) of paragraph 93 of the said Directions, for the words "a navigator's licence" where they respectively appear there shall be substituted the words "an aircraft navigator's licence, an aircraft navigator's licence, cadet class, an aircraft engineer's (O) licence, or an aircraft engineer's (O) licence, cadet class".

13. In sub-paragraph (d) of paragraph 93 of the said Directions, for the word "Navigators" there shall be substituted the words "An applicant for an aircraft navigator's licence, an aircraft navigator's licence, cadet class, an aircraft engineer's (O) licence, or an aircraft engineer's (O) licence, cadet class".

14. For paragraph 97 of the said Directions there shall be substituted the following paragraph :—

" 97. With reference to paragraphs 3, 4, 5, 6, 6A, 7 and 7A of Schedule V to the Order, the proofs of competency required in the case of a person applying for a licence of any of the classes referred to therein shall be as follows :—

(1) *Pilot*.—In the case of a person applying for a licence as pilot such proofs of competency shall (subject as hereinafter provided) consist of his having passed to the satisfaction of the Minister of Civil Aviation the respective tests and examinations specified in paragraphs 98 to 107.

(2) *Aircraft Navigator*.—In the case of a person applying for a licence as aircraft navigator the proofs of competency required shall be as specified in paragraph 108.

(3) *Aircraft Navigator, Cadet Class*.—In the case of a person applying for a licence as aircraft navigator, cadet class, proofs of competency will not be required. The applicant will, however, be required to produce satisfactory evidence that he requires such licence for the purpose of enabling him to obtain, under the supervision of a person holding an aircraft navigator's licence, first class or second class, training in navigational duties during flight. A certificate furnished by an air transport undertaking certifying that the applicant has been accepted for training in navigational duties in aircraft operated by that undertaking will be regarded as satisfactory evidence. In any other case, evidence as to the means by which it is proposed to obtain such training shall be submitted by the applicant for the consideration of the Minister of Civil Aviation.

An aircraft navigator's licence, cadet class, is not renewable. Another similar licence may, however, be granted at the discretion of the Minister of Civil Aviation upon the production of satisfactory evidence that such licence is required to enable the applicant to undergo further training in navigational duties during flight.

(4) *Aircraft Engineer (O)*.—In the case of a person applying for a licence as aircraft engineer (O) such proofs of competency shall consist of his having passed the examination and produced satisfactory evidence of engineering or aeronautical experience and flying experience as specified in paragraph 108A.



(5) *Aircraft Engineer (O), Cadet Class*.—In the case of a person applying for a licence as aircraft engineer (O), cadet class, proofs of competency will not be required. The applicant will, however, be required to produce satisfactory evidence that he requires such licence for the purpose of enabling him to obtain, under the supervision of a person holding an aircraft engineer's (O) licence, training in engineering duties during flight. A certificate furnished by an air transport undertaking certifying that the applicant has been accepted for training in engineering duties in aircraft operated by that undertaking will be regarded as satisfactory evidence. In any other case, evidence as to the means by which it is proposed to obtain such training shall be submitted by the applicant for the consideration of the Minister of Civil Aviation.

An aircraft engineer's (O) licence, cadet class, is not renewable. Another similar licence may, however, be granted at the discretion of the Minister of Civil Aviation upon the production of satisfactory evidence that such licence is required to enable the applicant to undergo further training in engineering duties during flight."

15. In paragraph 104 of the said Directions, for the words "a navigator's" there shall be substituted the words "an aircraft navigator's".

16. For the heading "NAVIGATORS" preceding paragraph 108 of the said Directions, there shall be substituted the heading "AIRCRAFT NAVIGATORS".

17. (1) In paragraph 108 of the said Directions, sub-paragraph (4) shall be renumbered (5) and the following shall be inserted as sub-paragraph (4):—

"(4) A detailed syllabus of the examinations for the two classes of licence referred to in this paragraph may be obtained on application to the Director General, Ministry of Civil Aviation, London, W.C.2."

(2) The following proviso shall be inserted at the end of paragraph 108:—

"Provided that an applicant who has at any time qualified as a navigator in any of His Majesty's air forces may, at the discretion of the Minister of Civil Aviation and according to the applicant's qualifications and flying experience, be exempted from all or any of the above examinations and requirements."

18. After paragraph 108 of the said Directions, the following heading and paragraphs shall be inserted:—

#### "AIRCRAFT OPERATIONAL ENGINEERS

##### *Grant of Licence*

108A. The examination and other requirements for the grant of an aircraft operational engineer's licence (hereinafter referred to as "an aircraft engineer's (O) licence") shall be as follows:—

(1) Engineering and/or aeronautical and flying experience.

(a) The applicant shall produce satisfactory evidence that he has had at least three years' engineering or aeronautical experience, followed by at least two years' practical experience on the maintenance of aircraft, including engines, one year of which must have been on the class of aircraft for which a licence is desired.

(b) He shall also produce satisfactory evidence that he has had at least 50 hours' experience in operational engineering duties on board the type of aircraft to which the application relates, or one of similar characteristics, during the twelve months immediately preceding the date of the application.

(2) Technical Examination.—The applicant will be required to undergo a written and oral examination as to his knowledge of the subjects specified below. The examination will have reference to the type of aircraft to which the application relates.

(i) International air legislation.

(ii) The Order, the Directions and Regulations issued thereunder, and the requirements laid down in the handbook of British Civil Airworthiness Requirements and amendments thereto published by the Air Registration Board, so far as they affect the responsibilities of an aircraft engineer (M) licensed in Categories A and C, and an aircraft engineer (O).

(iii) Practical arithmetical calculations, involving vulgar and decimal fractions, percentages and mensuration.

(iv) The principles of operation of internal combustion engines and the general construction of aircraft engines.

(v) The maintenance of aircraft, including engines, air-screws, instruments and equipment.

(vi) The installation and functioning of component parts of aircraft, including engines, airscrews, instruments and equipment.

(vii) The functioning of electrical, hydraulic, fuel, oil, oxygen and other systems of aircraft.

(viii) The assembly of aircraft structures, with particular reference to the assembly and functioning of flying controls and engine controls.

(ix) The adjustment of flying control surfaces for the purpose of rectifying faults experienced in flight.

(x) The method of inspection during replacement of approved parts, the defects likely to be encountered and their rectification and the permissible allowances for wear and deterioration.

(xi) The inspection, adjustment and testing of an engine and its accessories after the replacement of approved parts, to ensure correct functioning and power output.

(xii) The principles and functioning of shock-absorbing and retracting devices of alighting gear.

(xiii) The preparation of reports, illustrated by sketches, if necessary, describing the replacements or repairs required in the case of damage.

(xiv) The theory of flight and elementary aerodynamics.

(xv) Various terms and definitions used in the operation of aircraft.

(xvi) The loading, the weighing, and the determination of the position of the centre of gravity, of aircraft.



(xvii) Flight planning based on loading and performance charts, fuel consumption and engine power curves. Control of power output.

(xviii) Types of fuel and oil and fuelling procedure.

(xix) A general knowledge of operating manuals and a detailed knowledge of the operating manual relating to the type of aircraft to which the application relates.

Provided that—

(i) An applicant who has at any time qualified as an aircraft engineer in any of His Majesty's air forces may, at the discretion of the Minister of Civil Aviation and according to the applicant's qualifications and experience, be exempted from all or any of the above examinations and other requirements.

(ii) An applicant who is the holder of an aircraft engineer's (M) licence in Categories A and C may, at the discretion of the Minister of Civil Aviation, be exempted from the subjects of the examination specified in (2) (i) to (xiii) of this paragraph.

#### *Extension of Licence*

108B. An applicant for an extension of an aircraft engineer's (O) licence to cover an additional type of aircraft may, at the discretion of the Minister of Civil Aviation, be required to satisfy all or any of the requirements specified in (2) of paragraph 108A, and to produce satisfactory evidence that he has had at least 50 hours' experience in operational engineering duties on board the type of aircraft to which the application relates, or one of similar characteristics.

#### *Supplementary*

108C. An aircraft engineer's (O) licence may, at any time during its currency, be endorsed so as to authorise the holder to undertake in respect of aircraft of any type specified in the licence all or any of the undermentioned duties of an aircraft engineer (M) :—

Category A—Certification under subheads (i), (ii), (iii), (iv), (v) and (vi) of paragraph 45 ;

Category C—Certification under subheads (i), (ii), (iii) and (iv) of paragraph 45."

19. For paragraph 127 of the said Directions, the following paragraph shall be substituted :—

" 127. In these Directions, unless the context otherwise requires :—

" Minister of Civil Aviation " includes, in relation to any purpose of these Directions, any person authorised by the Minister of Civil Aviation for that purpose.

" Air Registration Board " means a body incorporated on the 26th February, 1937, to which certain functions have been delegated and entrusted in pursuance of Section 2 of the Air Navigation Act, 1936.

"Approved" means approved by the Minister of Civil Aviation, or, in relation to such of his administrative functions as are delegated to the Air Registration Board, approved by the said Board."

20. These Regulations may be cited as the Air Navigation Regulations, 1946.

21. These Regulations shall come into operation on the 1st March, 1946.

WINSTER

Minister of Civil Aviation.

Ministry of Civil Aviation,  
20th February, 1946.